

Five-Year Review Report



First Five-Year Review Report
for
Midnite Mine Superfund Site
Spokane Indian Reservation
Stevens County, Washington
May 1, 2009 – May 1, 2014

PREPARED BY
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ATTACHMENT 2 - LIST OF DOCUMENTS REVIEWED

1. Midnite Mine Record of Decision, September 30, 2006
2. Midnite Mine Superfund Site Operations & Maintenance Plan, Revision 3, January 30, 2014
3. Fencing Plan and Final Report (2009)
4. Midnite Mine Phase 1 RD/RA Unilateral Administrative Order, November 7, 2008, as amended November 18, 2008.
5. Midnite Mine Superfund Site Consent Decree, effective date January 17, 2012
6. Midnite Mine Superfund Site Performance Monitoring Plan annual reports – 2010, 2011, 2012, 2013
7. ALARA reports from 2009, 2010, 2011, 2012, 2013
8. Monthly Progress Reports submitted in accordance with UAO and Consent Decree
9. NPDES monthly reports for 2009 - 2013

ATTACHMENT 3 - COMPLETED INTERVIEW FORMS

ATTACHMENT 4 - INSPECTION CHECKLIST FROM COMPREHENSIVE FIVE YEAR REVIEW GUIDANCE (COMPLETED AS APPLICABLE)

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
ESD	Explanation of Significant Difference
ICIAP	Institutional controls Implementation and Assurance Plan
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
PRP	Potentially Responsible Party
PMP	Performance Monitoring Plan
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
UAO	Unilateral Administrative Order
WTP	Water Treatment Plant

Executive Summary

The 2006 selected remedy for the Midnite Mine Superfund site on the Spokane Indian Reservation in the state of Washington includes consolidation and containment of mine waste and treatment of mine-affected water. Mine waste includes waste rock, ore and proto-ore, stored mine cores, road gravel, contaminated soil, and pit and drainage sediments. The waste is to be moved into two open pits, adjacent to an area of previously backfilled pits. The pits, including an area of already backfilled pits, are to be graded and covered with a vegetated soil cover, and ground water entering the pits is to be removed and treated. The remedy also calls for institutional controls to protect the containment remedy and, until cleanup levels are achieved, to reduce exposure to contaminated groundwater and surface water.

This five-year review was triggered by the start of the water treatment system on May 1, 2009 following the transition of water collection and treatment to CERCLA authorities. Seasonal water treatment had been ongoing prior to the Record of Decision but was not specifically included in an enforceable document. The transition to CERCLA was formalized when the EPA issued a Unilateral Administrative Order pursuant to Section 106 of CERCLA (CERCLA Order) for Phase 1 remedial design and remedial action in November 2008. In addition to pre-design investigation work, the CERCLA Order required two potentially responsible parties, Dawn Mining Company and Newmont USA Limited, to initiate the following interim work while litigation and consent decree negotiations proceeded:

- continued water treatment system operation, maintenance and monitoring (Section 12.2.2 of the ROD),
- water treatment residuals management (Section 12.2.4 of the ROD),
- surface water and sediment management (Section 12.2.5 of the ROD), and
- institutional controls and access restrictions (Section 12.2.6 of the ROD)

This five-year review is focused on the interim (Phase 1) remedial action. This review does not address the other remedy components outlined in the 2006 ROD. Remedial design of the selected remedy is ongoing pursuant to a January 2012 consent decree between the United States and the Settling Defendants (two mining companies). The United States includes the EPA and the Settling Federal Agencies. Remedial action, including further action on elements initiated under the CERCLA Order, will be implemented at the conclusion of remedial design.

This review finds that elements of the remedy initiated to date are functioning as designed.

Specifically, the current water treatment system continues to operate as designed, and water treatment residuals are being managed appropriately. Interim actions have been taken to improve surface water and sediment management, and institutional controls (signs along Blue Creek). Access restrictions implemented (specifically fencing of the mined area) are functioning as designed.

The remaining elements of the remedy, including mine waste containment, with surface water and sediment management, replacement of the existing water treatment system with a new treatment system, permanent institutional controls and final access restrictions, are in design and have not yet been implemented. The remedy is expected to be protective when the remedial

action has been implemented, air and surface material cleanup objectives have been met, and groundwater and surface water cleanup goals are achieved through monitored natural attenuation (which is expected to require at least 10 years).

Operable Unit 2 involved a removal action to address spilled ore along the BIA Highway between Midnite Mine and the Dawn Mill in Ford, Washington. The removal action was incorporated into the 2006 Record of Decision by reference. Because the removal action addressed only radioactive materials from the mine that could be detected at the surface, the Selected Remedy called for institutional controls for these areas to ensure public and worker safety during future excavation activities along the road and to manage any additional ore debris. The institutional controls would take the form of procedures for notification and coordination among the Tribe and others, and an approach to screening for radiation during ground-disturbing activities in the right-of-way. Efforts to develop such procedures are underway through the Institutional Controls Implementation and Assurance Plan (ICIAP), which is currently in review.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Midnite Mine Superfund Site		
EPA ID: WA980978753		
Region: 10	State: WA	City/County: Stevens
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the site achieved construction completion? No	
REVIEW STATUS		
Lead agency: EPA If “Other Federal Agency” was selected above, enter Agency name:		
Author name (Federal or State Project Manager): Ellen Hale, RPM		
Author affiliation: EPA Region 10		
Review period: November 4, 2013 – May 1, 2014		
Date of site inspection: February 19, 2014		
Type of review: Statutory		
Review number: 1		
Triggering action date: May 1, 2009		
Due date (<i>five years after triggering action date</i>): May 1, 2014		

Five-Year Review Summary Form (continued)

Protectiveness Statement(s)

Operable Unit:
1 and 2

Protectiveness Determination:
Will be Protective

*Addendum Due Date
(if applicable):*
7T

Protectiveness Statement:

The remedy at OU1 and OU2 is expected to be protective of human health and the environment upon completion of the remedial actions and attainment of groundwater and surface water cleanup goals. In the interim, exposure pathways that could result in unacceptable risks are being controlled through access restrictions, warning signs, and the absence of groundwater wells in the area.

Long term protectiveness will be achieved through the implementation of the remaining remedial actions, including consolidation of waste materials, institutional controls, and the construction of a new water treatment plant.

**Midnite Mine Superfund Site
Spokane Reservation, Washington
First Five-Year Review Report**

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The United States Environmental Protection Agency (EPA), Region 10, conducted the five-year review of elements of the remedy implemented to date at the Midnite Mine Superfund Site on the Spokane Indian Reservation, Stevens County, Washington. This review was conducted by the Remedial Project Manager (RPM) for the entire site from November 2013 through April 2014. This report documents the results of the review.

This is the first five-year review for the Midnite Mine Site. The triggering action for this statutory review is the initiation of Phase 1 remedial action on May 1, 2009. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 - Chronology of Site Events

Event	Date
Mine operation – continuous, apart from 1965 - 1969	1954 - 1981
BIA and BLM studies and orders, EPA CWA order and NPDES permit	1978 - 1997
Studies under interim agreement with BLM – SOW developed by EPA, BLM, BIA, and Tribe	1998-1999
Start of water treatment pursuant to 1985 NPDES permit	1992
Site Assessment	1998
Final listing on EPA National Priorities List	Feb 2000
OU-2 removal – Mining companies removed detectable ore debris from the road between Midnite Mine and Ford, pursuant to AOC.	Summer 2004
Cost recovery claim initiated	January 2005
Remedial Investigation/Feasibility Study (RI/FS) completed	September 2005
Proposed plan identifying EPA’s preferred remedy presented to public; start of public comment period.	September 2005
ROD selecting the remedy is signed	9/29/2006
Cost recovery claim ends with judgment on liability	October 2008
CERCLA Order requiring interim work (Phase 1 RD/RA) including continued water treatment and residuals management, surface water management upgrades, site fencing, and pre-design studies	November 2008
Initiation of RD/RA Consent Decree negotiation	May 2009
Seasonal start of existing water treatment system on-site, now under CERCLA authorities (1 st phase of site Remedial Action and date that triggers a five-year review).	May 2009
Ongoing water treatment, interim work to improve surface water management, site fencing, and initial pre-design investigations	November 2008 through January 2012
Consent Decree finalizing settlement for responsible party performance of remedy entered by Federal Court	January 2012
Additional pre-design investigations and 30% and 60% design reviews	2012 - 2014

III. Background

Physical Characteristics

The Midnite Mine Site is a former open-pit uranium mine located in eastern Washington State, approximately 45 air miles northwest of Spokane and 8 miles northwest of Wellpinit (Figure 1, Site Location). The Site is located on the Spokane Indian Reservation on lands held in trust for the Spokane Tribe of Indians and several individual tribal members. It includes approximately 350 acres directly affected by mine operations, as well as down-gradient mine-affected groundwater, surface water, and sediment. Mining left two open pits partially filled with water, an area of backfilled pits, waste rock piles, and stockpiles of unprocessed ore and proto-ore. The mined area extends approximately 1000 vertical feet on a south-facing slope that drains to Blue Creek, which in turn flows to the Spokane River arm of Lake Roosevelt.

Land and Resource Use

Mining started in the mid-1950s and was discontinued in 1981. Ore was transported off-site to the Dawn Mining Company mill at Ford, Washington for processing.

The tribal lands surrounding the site and Blue Creek are mostly used for wildlife management, forestry, recreation, hunting and other subsistence activities. Allotments and fee lands adjacent to the mined area have not been developed. The Spokane Tribe proposes to/intends to use the site for a hunting lodge.

The mined area is currently fenced. Contaminated seeps and mine runoff are captured and pumped to one of the open pits for storage, then treated at the seasonally operated water treatment system on site.

Groundwater impacted by the Site is currently not used as a drinking water source. Although deeper groundwater flows along bedrock fractures, both shallow groundwater and bedrock groundwater follow the topography and generally flow to the south toward Blue Creek.

History of Contamination

Over 33 million tons of rock was blasted and excavated to access uranium ore. The waste was dumped in piles, used to fill mine pits, or spread on the surface. About 2.4 million tons of ore and near ore-grade rocks were also stockpiled at the mine in anticipation of later processing.

Sulfide minerals in the exposed rock interact with air and water, forming acid rock drainage. The acidified water dissolves metals in the rock and flows to surface water or into groundwater. Particulate transport and precipitation of dissolved contaminants has affected down gradient surface water, sediments and groundwater. Dust movement and other transport mechanisms have affected soils. In addition, uranium from below-ground deposits was exposed at the surface, resulting in elevated levels of radiation from related radio-nuclides.

Initial Response

Starting in the late 1970's, seep collection and containment efforts began, as the environmental issues were recognized at the site. Various federal agencies, including BIA, BLM, USGS, and The EPA performed studies and required the mining company to intercept contaminated water and treat it prior to discharge.

BLM entered an agreement with Dawn Mining Company for completion of interim work in 1998 while The EPA performed a site assessment and the US sought a settlement with the mining company. When settlement talks failed, the EPA proposed the site to the National Priorities List (NPL). Following the proposed rule in February 1999, a final rule added the site to the NPL in May 2000. In 2004, Dawn Mining Company performed a removal action to address spilled ore detectable by radiation scans adjacent to the haul road to the mill at Ford.

The EPA initiated a fund financed remedial investigation and feasibility study (RI/FS) in 1999, ending with the publication of a Proposed Plan in September 2005. The selected remedy was documented in a Record of Decision in September 2006.

The United States filed a claim for RI/FS costs in January 2005, and in October 2008 the federal court ruled that Newmont, Dawn, and the United States were liable for these costs. In November of that year, the EPA issued a CERCLA Order to the two mining companies for interim remedial design/remedial action (phase 1), while entering negotiations with the federal agencies and the mining companies for full remedy implementation.

From May 2009 to January 2012, when a consent decree covering all required actions was entered by the court, the mining company performed interim actions, including fencing the site, improving surface water management, operation of the water treatment plant, testing for water treatment plant modifications and initial design investigations.

Basis for Taking Action

Contaminants

Hazardous substances released at the Site as a result of mining include numerous metals and radio-nuclides that exceed background in various media. Cleanup levels were determined for the following contaminants of concern based on human and/or ecological risk:

Surface Material

Uranium
Lead-210
Radium-226

Sediment

Lead-210
Uranium-238
Uranium-234
Radium-226
Chromium
Manganese
Selenium
Uranium (total)
Vanadium

Groundwater

Uranium-238
Uranium-234
Manganese
Uranium (total)

Surface Water

Lead-210
Uranium-238
Uranium-234
Aluminum (total)
Barium (total)
Beryllium (total)
Cadmium (dissolved)
Cobalt (total)
Copper (dissolved)
Lead (dissolved)
Manganese (total)
Silver (dissolved)
Uranium (total)
Zinc (dissolved)

In addition, the ROD calls for the soil cover to meet the radon-222 release rate (flux) of 20 pico-Curies per square meter per second.

Exposures to gamma radiation and to soil, groundwater, surface water, sediment and associated food resources are associated with significant human health risks. Radiation related risks alone exceed the EPA's risk management criteria for both the average and the reasonable maximum exposure scenarios.

IV. Remedial Actions**Remedy Selection**

The ROD for the Midnite Mine Site was signed on September 29, 2006. Remedial Action Objectives (RAOs) were developed as a result of data collected during the Remedial Investigation. The RAOs aided the development and screening of remedial alternatives in the Feasibility Study (FS) as part of the remedy selection process documented in the ROD.

The RAOs for Midnite Mine were divided into the following groups:

Surface Material and Sediments

Surface material includes soil, ore, proto-ore, waste rock, overburden, and materials used in haul road construction. Sediments include sediments in pits, ponds, creeks, and drainages. RAOs for these materials are:

- Reduce exposure of humans and ecological receptor populations to COCs in and radiation from mining-affected surface materials and sediments to levels that do not result in unacceptable site-related risks.
- Reduce loadings of COCs from surface materials and sediments to surface water and groundwater so that loadings do not result in unacceptable site-related risks.
- Reduce environmental transport of mining-affected surface material from the Mined Area to areas outside of the Mined Area. Prevent people from removing mining-affected surface material.

Surface Water

Surface water includes seeps and water in the pits, ponds, and other surface impoundments, and in creeks and drainages. RAOs include the following:

- Reduce exposure of humans and ecological receptor populations to COCs in surface water to levels that do not result in unacceptable site-related risks.
- Reduce infiltration of surface water into acid rock drainage-generating materials and reduce erosion and environmental transport of mining-affected surface materials by surface water.
- Reduce loadings of COCs from surface water to groundwater so that loadings do not result in unacceptable site-related risks.

Groundwater

RAOs for groundwater at the Site include:

- Reduce exposure of humans to COCs in groundwater to levels that do not result in unacceptable site-related risks.
- Reduce loadings of COCs from groundwater to surface water so that loadings do not result in unacceptable site-related risks.

Air

Air RAOs include the following:

- Reduce exposure of humans to radon-222 or its decay products by limiting the average radon-222 release rate from radioactive materials to levels that do not result in unacceptable site-related risk.

The major components of the remedy selected in the ROD include the following:

1. Containment of Mine Waste in Pits
2. Water Collection and Treatment
3. Residuals Management
4. Surface Water and Sediment Management
5. Monitored Natural Attenuation of Groundwater
6. Institutional Controls and Access Restrictions
7. Long-term Site Management
8. Contingent Actions

Permanent institutional controls are required for the Midnite Mine containment area, areas supporting water treatment, and other remediated areas to prevent exposure and preserve the integrity of the remedy. Institutional controls for mine affected groundwater, surface water, and sediment are also required until the cleanup objectives are met through monitored natural attenuation. Institutional controls have not been implemented yet, but the ICIAP submitted with the design sets forth a plan for their implementation and assurance. For sediments in Blue Creek, active cleanup is called for as a contingency if the cleanup objectives will not be or are not achieved ten years after mine waste containment.

Remedy Implementation

In January 2012, under a Consent Decree (CD) entered in federal district court, Dawn Mining Company LLC and Newmont USA Limited initiated remedial design/remedial action (RD/RA). The CD also included reimbursement of past EPA response costs and established financial assurances, including a contribution from the settling federal agencies. Remedial Design of the overall remedy is underway, and Remedial Action is scheduled to start in 2015 and to continue for approximately 7 years. The site has not achieved construction completion status.

As noted above, the initiation of Phase 1 Remedial Action under CERCLA triggered the five year review. Specifically, following the November 2008 CERCLA Order, seasonal water treatment system operations resumed on May 1, 2009, under CERCLA authorities. Seep collection, pump-back, storage, and water treatment had been ongoing under other authorities in prior years, with discharge subject to an EPA-issued NPDES permit.

Since November 2008, in addition to remedial design investigations, the following interim work elements have been completed:

- The mined area was enclosed in a 4.2 mile long, 7-foot high chain link fence, with card-operated gates and signage (shown on Figure 2)
- A facility and a process for vehicle and personnel decontamination is now in place (Figure 3),
- Workers use an on-site washing machine for work clothes.
- Clean gravel has been added to the site access road to allow delivery of treatment system reagents to the water treatment plant without requiring decontamination.

- The pump-back and water treatment systems have been upgraded with the addition of sensors, backup generators, alarms, and automatic switches.
- Health and safety planning and O&M documentation have been prepared.
- Two wells have been installed in alluvial areas to increase interception of mine-impacted water.
- Surface water management systems have been improved through grading and establishing surface ditches, impoundment, replacement of undersized pipes, etc.
- Residuals management plans have been prepared and submitted on a regular basis to ensure that plans for disposal of water treatment system waste off site are documented in advance and demonstrate compliance with applicable regulations.
- Treatability testing has been performed on the use of ion exchange resins to remove uranium.
- A filter press (and related facilities) has been added to the existing water treatment system to allow disposal without the addition of absorbent chemicals.

Water Treatment System Operation/Operation and Maintenance

While design of the remedy continues, year-round water collection and storage, seasonal water treatment plant operation, and disposal of water treatment residuals have continued as part of the Phase 1 Remedial Action. Following the 2008 CERCLA Order, the radioactive materials license for the water treatment plant (WTP) was terminated. Discharge of treated water on site continues to occur, subject to NPDES permit (WA-002572) first issued in 1985.

The water treatment process involves the addition of barium chloride followed by lime precipitation. The precipitate is settled and centrifuged as sludge. Sulfuric acid addition brings the water back to approved pH before discharge to on-site surface water. The ROD requires interim operation of the water treatment plant and replacement of the current WTP during the remedial action phase, as the existing WTP is built on top of waste rock.

The primary activities associated with system operation include the following:

- Capture of mine-impacted water from discrete seeps and alluvial wells
- Pumping of captured water to Pit 3 for storage
- Pumping of water from Pit 3 to the water treatment plant during WTP operation
- Seasonal operation of the existing water treatment plant (four 24-hour days a week until the pit water level is at target levels. Average treatment volume is 60,000,000 gallons per year).
- Offsite disposal of residuals from the water treatment process
- Monitoring and reporting required by the NPDES permit for the WTP
- Monitoring of surface water and groundwater quality pursuant to the Performance Monitoring Plan.
- Monthly inspection and necessary repairs of the fence.
- Routine and focused inspection and repair of site surface water management systems

The annual O&M costs for water treatment depend in large part on the volume of water treated

and the resulting sludge transport and disposal. Until December 31, 2013, the radioactive materials license for the off-reservation mill (Dawn Mill) where Midnite Mine ore was processed provided for disposal of water treatment plant sludge in the tailings disposal area. This provision was terminated to allow for regulatory closure of the Dawn Mill. The sludge, which contains heavy metals and radio-nuclides, can be processed as uranium source material or disposed of as low-level radioactive waste. In recent years, seasonal WTP operators (three 2-person crews, Monday through Thursday) have operated the plant April - October, as needed, to treat approximately 60,000,000 gallons per year. Mining company personnel have maintained the pump-back system and transported the sludge to the mill in trucks owned by the mining company.

A summary of annual system operation costs for the previous five year period is provided below. Costs include:

- Personnel (including radiation protection training, H&S training and monitoring)
- Diesel fuel for seep capture and back-pumping system, electricity, supplies (Barium Chloride, lime, sulfuric acid, flocculant and anti-scalant)
- Transport (annual, prior to 12/31/2013)– personnel, trucks, fuels ~ \$15,000/year
- Sampling, analysis, and reporting for NPDES and other purposes
- Maintenance/repairs/upgrades
- Administration/Documentation (Residuals management plans, O&M updates, etc)

Table 2 – System Operation and Maintenance Costs

2009 - 2013 - Water Treatment Plant operating expenses

	2009	2010	2011	2012	2013
Other Consumables	\$123,722.11	\$196,962.24	\$329,566.53	\$344,148.70	\$186,704.30
Repair/Maintenance	\$15,906.57	\$7,995.50	\$35,363.01	\$19,727.63	\$3,815.48
Salary	\$312,135.14	\$324,355.64	\$491,933.41	\$337,909.16	\$375,875.24

2009 - 2013 Water Management

	2009	2010	2011	2012	2013
Other Consumables	\$31,049.14	\$30,837.19	\$23,065.74	\$72,334.65	\$35,388.39
Repair/Maintenance	\$6,791.60	\$3,220.32	\$3,225.55	\$39,912.51	\$2,538.58
Salary	\$83,286.15	\$102,191.01	\$95,588.89	\$67,611.87	\$81,723.46

2009 - 2013 Sludge Disposal

	2009	2010	2011	2012	2013
Other Consumables			\$169,835.01	\$10,130.48	\$18,004.92
Repair/Maintenance	\$5,514.23	\$2,568.95	\$4,060.03	\$5,374.76	
Labor	\$10,625.65	\$8,149.13	\$9,569.72	\$12,213.28	\$5,819.84
Off-Site Disposal			\$1,404,843.08		

The ROD assumed treatment of 6.5 million gallons of mine-impacted water per year at the water treatment plant following waste containment. Table 12-1 of the ROD estimated annual O&M costs for this treatment volume of \$54,600. Current water volumes do not reflect the reductions expected following containment and are generally on the order of 60 million gallons or more. Even without factoring in inflation, the five year average O&M cost of \$750,000 (excluding sludge disposal) is not unreasonable.

The ROD assumed that residuals disposal costs, estimated at \$3,300 per year for disposal under the Dawn Mill Radioactive Materials License, would increase after 3 years due to the anticipated closure of the mill. At that point, the waste would be disposed as low level radioactive waste. In actuality, after the ROD, the mill license was modified to extend the disposal period several times. As of December 31, 2013, this disposal option is no longer available.

The elevated cost for offsite disposal in 2011 reflects a month-long period when sludge required the addition of solidifying agents and disposal as low-level radioactive waste at the U.S. Ecology commercial facility in Richland, Washington. Due to the high cost of residuals disposal as low level radioactive waste, the mining company has sought to develop alternative disposal options, as allowed in the ROD. Until residuals volumes are reduced by mine remediation, the disposal costs are likely to be significant.

V. Progress Since the Last Five-Year Review

This is the first five-year review for the site.

VI. Five-Year Review Process

Administrative Components

The Midnite Mine Five-Year Review team was led by Ellen Hale, the EPA's Remedial Project Manager (RPM) for the Midnite Mine Site, with support by Kelly Cole, Office of Regional Counsel, and Caryn Sengupta, Community Involvement Coordinator (CIC). Additional support was provided by CH2M Hill technical support contractors and the EPA staff from the Office of Environmental Assessment with expertise in risk assessment. Randy Connolly of the Spokane Tribe Department Natural Resources assisted in the review as the representative for the Tribe in its role as support agency.

As part of the ongoing Remedial Design process, project team conference calls occur twice monthly and in-person meetings happen at least once a quarter. The EPA provided informal notice of the initiation of the five-year review in the course of these project meetings, with written notification in an email dated January 28, 2014. Active community involvement is also ongoing, with a focus on the ongoing RD/RA. Because the full remedy has not been implemented, the EPA elected not to do extensive outreach, but included references to the remedy review in a project update sent via the EPA list-serve to over 100 interested community members on February 10, 2014.

The RPM scoped the review by reviewing the guidance and meeting with community

involvement staff, headquarters staff, and her supervisor. The review team performed the review from November 2013 to March 31, 2014, including the following components:

- ☐ Community Involvement;
- ☐ Document Review;
- ☐ Review of NPDES monitoring results and overall site monitoring;
- ☐ Site Inspection;
- ☐ Five-Year Review Report Development and Review.

The RPM interviewed the lead WTP manager, Robert Nelson Jr., and inspected the WTP on February 19, 2014. The WTP was not operating at the time, as expected. Snow on site made access to inspect other areas of the site infeasible.

Community Involvement

Activities to involve the community in the five-year review were initiated with a meeting in November 2013 between the RPM and the Community Involvement Coordinator (CIC) for the Midnite Mine Superfund site. Given community involvement efforts related to the ongoing design of major remedy components and the fact that the interim work has not altered the nature and extent of contamination, the CIC and RPM agreed to reference the five year review in one of the regular list-serve updates but not to offer community interviews or published notices. The RPM frequently reminded the project team, including the Superfund Coordinator for the Spokane Tribe, of the ongoing five year review.

A notice will be published in the Rawhide Press to announce that the first Five-Year Review report for the Midnite Mine Superfund site is complete and that the results of the review and the report are available to the public on line, at the Tribal Department of Natural Resources, and at the EPA Region 10 office in Seattle.

Document Review

This five-year review focused on the Phase 1 remedial actions. The RPM reviewed relevant documents listed in Attachment 2, including monthly progress reports, O&M records, Health and Safety Plans and ALARA audits, and NPDES discharge monitoring reports. The discharge monitoring reports were compared to the limits in the existing NPDES permit. These limits are incorporated into the ROD as interim limits for discharge to surface water (ROD Table 12-2). In addition, the RPM reviewed the annual Performance Monitoring Plan (PMP) reports to determine if there were trends or changes in site conditions.

Data Review

WTP Discharge Monitoring

During the five year monitoring period, from May 2009 until present, there were no exceedances of the permit required discharge limits. The discharge monitoring reports are submitted monthly to the RPM and to the NPDES compliance file. The limits, listed below, were established in the NPDES permit (WA-002572-1) issued by the EPA in 1985. They were incorporated into the ROD as interim discharge limits. Actual discharge water quality has metals concentrations of the listed parameters well below the permit limits. For example, uranium is typically discharged at

concentrations below the federal drinking water standard of 30 µg/L. Radium-226 in the treatment system discharge is typically two orders of magnitude below the discharge limit of 30 pCi/L. (Note that the drinking water criterion, for radium-226 and radium 228 combined, is 5 pCi/L).

The ROD requires a replacement water treatment plant and discharge of treated water in the Spokane River, rather than to an onsite pond which flows to Blue Creek. The mining company has submitted an application for an updated permit, which is expected to have more stringent discharge limits.

Table 3. Interim Discharge Limits

TABLE 12-1 of ROD		
Pollutant or Contaminant	Interim Discharge Limit^{a, b}	
Uranium ^c (total)	4,000 µg/L max 2,000 µg/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that uranium concentrations of less than 200 µg/L are achievable under current conditions.
Radium-226 ^c (dissolved)	10 pCi/L max. 3 pCi/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that dissolved radium-226 concentrations of less than 3 pCi/L are achievable under current conditions.
Radium-226 ^c (total)	30 pCi/L max. 10 pCi/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that total radium-226 concentrations of less than 3 pCi/L are achievable under current conditions.
Manganese (total)	10,000 µg/L max. 3,000 µg/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that manganese concentrations of less than 1,500 mg/L are achievable under current conditions.
Copper ^d (total)	184 µg/L max. 126 µg/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that copper concentrations of less than 20 µg/L are achievable under current conditions.
Cadmium ^d (total)	15 µg/L max. 10 µg/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that cadmium concentrations of less than 4 µg/L are achievable under current conditions.
Zinc ^c (total)	1000 µg/L max. 500 µg/L avg.	Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions. Permit discharge reports indicate that zinc concentrations of less than 20 µg/L are achievable under current conditions.

pH ^c	6-9	
TSS ^c	30 mg/L max 20 mg/L avg	
COD ^c	200 mg/L max 100 mg/L avg	

a – Discharge limits are consistent with NPDES Permit WA-002572-1 and must not be exceeded. Treatment system discharge shall meet the lowest concentrations achievable with the treatment methods currently in use and as appropriate for site conditions.

b - Monitoring of parameters in Table 12-1 shall continue per NPDES Permit WA-002572-1 until alternative monitoring plan is approved by the EPA. Alternative plan may include monitoring per methods in 40 CFR 136 for whole effluent toxicity (WET), ammonia, temperature, DO, TDS, antimony, mercury, lead, iron, sulfate and other parameters necessary to develop a future permit application. The EPA may also require interim monitoring of COCs (aluminum, barium, beryllium, cobalt, lead, nickel, silver, lead-210, uranium-238, and uranium-234).

c - NPDES permit limit based on technology-based effluent limit guidelines (ELGs) for uranium mines at 40 CFR 440.32 and 440.33.

d – NPDES Permit limit based on Washington State water quality standards at the time permit was issued.

Groundwater Monitoring

Currently, surface water at the site is captured and held in the open pits for treatment. Two wells (PBW-1 and PBW-2) were added to capture some of the alluvial groundwater flowing south from the site and discrete seeps are captured at the site. However, surface water continues to enter groundwater through infiltration, contact reactive mine rock, and emerge in down gradient surface water or continues to flow through groundwater fractures. The remedial action is intended to limit the amount of water affected by contact with mine waste and to ensure that low water levels are maintained in the pit to ensure that groundwater flows towards the pits. Until then, groundwater quality is not expected to improve.

This is demonstrated by ongoing monitoring. Two bedrock and six alluvial monitoring wells south of the mined area are sampled twice a year in accordance with the Performance Monitoring Plan. The results for each of 27 measurement parameters is compared to a seasonal action level based on past monitoring results at that location. While the data confirm that impacts to groundwater have not changed in most locations, there are indications that interception of the alluvial groundwater or perhaps recent dewatering in the backfilled pit area may be contributing to short-term exceedances of the action levels for sulfate and conductivity in two bedrock wells (GW-50 and GW-51).

Uranium concentrations at all of the wells monitored under the PMP range from below detection to over 10,000 µg/L, as compared to the MCL of 30 µg/L. Uranium concentrations at the other monitoring wells range from 8 to 130 µg/L, with most exceeding the MCL but only a few exceeding the groundwater cleanup level of 88 µg/L. The groundwater cleanup level is based on site background concentrations, which are elevated near the mine. The highest uranium concentrations are consistently found in MMGW-36A, an alluvial well south of the pollution control pond.

Surface Water and Sediment Monitoring

Until the remedial action for the mine waste begins and mine waste—which includes contaminated mine drainage sediments -- is contained in the pits and until groundwater flows

towards the pits and has flushed through the system, surface water is not expected to achieve cleanup levels, particularly in areas of the Site currently influenced by groundwater.

The Performance Monitoring Plan calls for quarterly sampling of surface water. Sample locations include key seeps, open pits, ponds, mine drainages, and Blue Creek upstream and downstream from where the mine drainages join into the creek. As expected, the monitoring does not indicate that there is a trend in the conditions observed in these areas.

The seeps in the Western, Central Eastern, and Eastern Drainage have some of the poorest water quality. The “Pumphouse Seep” sulfate concentration was 5,790 mg/L in fall 2013, with the highest uranium levels in surface water samples (U-238 at 14,200 pCi/L). The seeps are captured and pumped to the Pollution Control Pond (PCP) and Pit 3 for storage until seasonal treatment.

Pit 3 water quality reflects the combination of groundwater and collected seep water stored there, with high (total) uranium (17,500 µg/L in October 2013) and sulfate levels (2520 mg/L). Pit 4 water is lower in both uranium (2,440 µg/L) and sulfate (239 mg/L). The PCP also has high uranium (14,400 µg/L) and sulfate (3,380 mg/L).

Samples at SW2, SW12, SW11, WDAC, and SW6 illustrate the water quality in downstream mine drainages below where the seeps are captured. This water is generally less contaminated than the seeps and reflects a combination of surface water runoff and, in gaining reaches, groundwater. For part of the year, SW-2, SW-11, and SW-6 are influenced by the water treatment plant discharge, which tends to have uranium concentrations around 30 mg/L. Sulfate levels, indicative of acid rock drainage, are similar at these locations (for example, SW12: 2110 mg/L; SW11: 2160 mg/L; WDAC: 1880 mg/L; SW6: 2150 mg/L). Concentrations of uranium (total) are also relatively comparable at these sample locations (SW2 at 74 µg/L, SW11 at 82 µg/L, WDAC at 21 µg/L, SW12 at 43 µg/L). During seasonal water treatment plant operation, water quality at SW-2, SW-11, and SW-6 is influenced by treated water (discharged at the top of the East drainage).

Blue Creek sulfate levels at SW4U, well upstream of mine impacted surface water, are low (1.69 mg/L) and remain fairly low just upstream of where the combined mine drainages flow into Blue Creek (31.3 mg/L at SW4). Sulfate levels at SW5, just below that confluence, rise to 1330 mg/L, and then drop to 778 mg/L at SW-7, where Oyachen Creek joins Blue Creek, and are lower (456 mg/L at BC-01) just before Blue Creek enters the Spokane River. Blue Creek uranium concentrations show similar trends (2.5 µg/L or lower at SW4U, 4.6 µg/L or lower at SW4, rising to 18 µg/L at SW5 below the confluence, 25.5 below Oyachen Creek, and 30 µg/L or lower at the mouth of Blue Creek.)

Sediment Monitoring

The Performance Monitoring Plan calls for annual sediment sampling at six locations. Three are in the mine drainages south of the Site SW-11 (Eastern Drainage, south) SW-12 (Central Drainage), WDAC (Western Drainage). The others are at an upstream location, 1/3 mile downstream of the point where the mine drainage joins Blue Creek, and 1 mile downstream of that point.

The results do not indicate significant changes since the RI/FS. Remedial action, once implemented, will remove contaminated sediments from the drainages south of the mined area, and potentially also from parts of Blue Creek. Blue Creek sediments may be left in place if they are likely to achieve the ROD cleanup levels within 10 years of mine waste containment.

Site Inspection

The RPM inspected the Site on February 19, 2014 and completed applicable portions of the Comprehensive Five Year Review guidance checklist (Attachment 3). The purpose of the inspection was to assess the protectiveness of the Phase 1 remedial actions, including fencing to restrict access and the operation of the interim seep and alluvial groundwater pump-back, storage, and treatment system.

No significant issues were identified with the Site operations. The fence is operating as intended to keep people, vehicles, and large mammals out. Fence conditions are inspected monthly and reported in the monthly progress report. The automatic gate is operative. Sign-ins and safety briefings take place at the Dawn Mill, at the water treatment plant, and (for those going beyond the clean access road area) at the decontamination facility. A sign-in kiosk may be added at the Midnite Mine gate, for safety information and sign ins, to ensure the tracking of delivery vehicles which do not leave the clean road but are within the fenced area.

The water treatment plant was not in operation during the Site inspection, as it does not operate in winter. Discussions with Bill Lyle, Project Coordinator, Lou Miller, Supervising Contractor, and Robert Nelson, Jr., Site Operations Manager, indicated that WTP chemicals that are currently stored at the mill need appropriate storage facilities at Midnite Mine, due to planned demolition and closure of the Dawn Mill storage buildings.

In addition, the RPM noted the lack of a routine maintenance schedule for the pump-back and water treatment system, inspection checklist, and maintenance log. Inspections and maintenance are performed by personnel familiar with the system during winter, when the plant is not operating, but documentation of the work procedures and what has been completed has not been prepared. A January 30, 2012 update of the Operations, Maintenance and Monitoring Plan was submitted for the EPA's review, and comments will require the final OMMP to include a routine maintenance schedule, maintenance inspection checklist, and maintenance log.

Interviews

On February 19, 2014, prior to the site inspection, the RPM spent time at the Dawn Mill office and interviewed key personnel associated with the interim operations at Midnite Mine. No significant problems regarding the Site were identified during the interviews. The RPM interviewed Robert Nelson, Jr. of Dawn Mining Company, Bill Lyle of Newmont USA Limited, and Lou Miller of Miller-Worthington Environmental.

The RPM also spoke with Ron Samuels of the Spokane Tribe Fire and Rescue Department by phone. Mr. Samuels identified concerns regarding the need for Hazwoper training for staff who may need to respond to health emergencies during Site remediation. Their work schedule makes the 40-hour training challenging to schedule. The mining company is in contact with them to address this issue.

The RPM contacted Blaine Kieffer of the Spokane Tribe Fire Management by phone. A forest fire occurred at the Site in 2009, and fire crews had to enter the fire area through the newly constructed fence. In 2013, lightning caused two small forest fires, one near Pit 4 and one outside

the fence. Improved coordination between the mining company and fire management allowed appropriate access of fire equipment to the onsite fire and decontamination of the equipment when the fire was subdued. Mr. Kieffer noted that communication with the mining company regarding these topics is helping. Interview summaries are attached (Attachment 4).

The mining company developed a Health and Safety Plan for visitors and for first responders. The latter was provided to the Tribal first responders in 2010. Radiation safety training was provided to the fire management crew in July 2012. The mining company is working with the Tribe to include first responders in a HAZWOPER training being offered to the Spokane Tribe Cultural Preservation field staff in 2014.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes. The majority of the remedy in the decision documents has not been implemented yet.

The existing water treatment plant was built prior to remedy selection and was designed to meet NPDES permit limits at that time. However, continued operation of the existing seep pump-back and water treatment plant until it is replaced by a new system is part of the remedy. The water treatment system is functioning as designed and meets the current NPDES permit limits. There were no opportunities for system optimization observed during this review. The existing pump-back system will no longer be operated after the waste rock has been contained in the pits. The existing water treatment system will be demolished and replaced with a new plant designed to meet updated discharge limits.

A fence is also part of the selected remedy, under short term access restrictions. The fence around the Site is in good repair and restricts access to the pits, waste rock piles, and the most significantly impacted surface water and sediments. Monthly progress reports show that minor repairs are occasionally required and completed, often due to falling trees or branches.

Based on visual evidence and confirmation by the Spokane Tribe's Superfund Coordinator, mine-impacted groundwater is not used for drinking water in the mined area or in down-gradient areas to the south, between the mine pits and Blue Creek. The Site is in a wildlife management area of the reservation. Though there are individual allotments to the north, east, and west, the allotments have not been developed for residential purposes at this time. During mine operation, workers used water from an onsite well, but this well has not been used for many years. The current operators of the pump-back system and WTP drink and wash with water delivered by truck. Institutional controls to formally restrict groundwater use or development of wells for domestic use are being developed, as required by the ROD.

Reportedly, uses of surface water in the area include drinking (when people are harvesting or working in the area) and sweat lodge use. This is no longer common, particularly in the mine drainages south of the Site, but may still occur along Blue Creek. The background based cleanup level for uranium is 19.6 µg/L, which is below the MCL of 30 µg/L. The interim discharge limit for uranium in water treatment plant discharge is 2,000 µg/L average, but actual discharge water quality is significantly better, rarely exceeding 30 µg/L.

Concentrations of uranium in Blue Creek samples in most of the sample locations downstream of mine influences are below the cleanup level, with the exception of SW-7, which approaches the MCL of 30 µg/L at times. During seasonal treatment system operations, treated water from Midnite Mine makes up a significant part of Blue Creek flow. When the water treatment system is not operating, surface water quality downstream may be more influenced by groundwater. In addition to groundwater from Midnite Mine and potentially a drainage with another former uranium mine may be the cause of the elevated uranium in Blue Creek.

Monitoring in accordance with the PMP provides sufficient data to assess trends in concentrations of contaminants in environmental media downgradient of the Site. These trends are not expected to show reduced concentrations until after containment of the mine waste has been completed.

ATSDR published its health advisory in the Rawhide in 2010, and in 2011 the Spokane Tribe posted signs along Blue Creek and the mine drainages advising visitors not to use the creek water, fish, or other resources. (See Figure 4, showing the location of signs developed and posted by the Tribe).

Contaminant concentrations in Blue Creek appear stable, and though they meet or are very close to the background-based cleanup levels for surface water for contaminants of concern for human health and the environment, the levels are not protective of the tribal subsistence life-time exposures contemplated in the risk assessment.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Yes. There is no reason to change exposure assumptions used for risk assessment in the RI/FS, which are based on residential and subsistence uses of the Site. Land use has not changed. Cleanup levels are also still valid. Most are based on site background, which has not changed. No changes in the physical conditions of the Site affect the anticipated protectiveness of the remedy.

To Be Considered and Changes in Standards

In 2010, following the ROD, the Spokane Tribe issued an update to its 2003 EPA-approved water quality standards. The 2010 water quality standards are based on the tribal subsistence exposure assumptions adopted in 1999 by Tribal Resolution 2000-105. The exposure assumptions include increased rates of fish consumption and water ingestion compared to those used to develop the 2003 water quality standards. As a result, the majority of the 2010 standards for toxic criteria are more stringent. The Spokane Tribe applied for and received treatment in the same manner as a state status (TAS) in 2002. In compliance with the Clean Water Act, the EPA wrote the Tribe on December 19, 2013, and approved, disapproved, and took no action on various elements of the Spokane Tribe standards. Both the 2003 and 2010 water quality standards state that where concentrations at natural background exceed the numerical criteria in the standards, the natural background concentration becomes the criteria. Since the cleanup limits for surface water are based on background, they continue to comply with ARARs.

The EPA promulgated the Maximum Contaminant Limit (MCL) of 30 µg/L for uranium (as a metal) in 2000. The cleanup level for uranium in groundwater at Midnite Mine is 88 µg/L, based on background levels of uranium. While the ROD notes that MCLs are relevant and appropriate for groundwater outside the waste containment areas, it notes that for contaminants for which background is greater than the MCL, the MCL is relevant but not appropriate.

Regulatory changes do not affect the protectiveness of the remedy, as the cleanup levels are based on background or ecological criteria in the Tribe's water quality standards that are still current. No new standards or TBCs were identified that could affect the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included both residential and subsistence exposures. There is no basis to modify exposure assumptions for residential and subsistence exposures.

There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions, or the cleanup levels developed from them, is warranted. There has been no change to the risk assessment methodology that could affect the protectiveness of the remedy.

Regarding the ecological risk assessment, there are no changes in exposure pathways, toxicity, and other contaminant characteristics that would affect Site cleanup levels. The cleanup levels for surface water are mostly based on background or on ecological criteria in the Spokane Tribe water quality standards that have not changed.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No. There is no information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the Site inspection, and the interviews, the elements of the remedy (Phase I) implemented so far are functioning as intended by the ROD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment that would alter the cleanup levels, which are based on background, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues and Recommendations

There were no issues or recommendations identified that affect current or future protectiveness of the implemented portion of the remedy. Interim actions are ongoing while design of the selected remedy is under way. Design may identify minor or significant changes to the selected remedy. If so, these will be addressed as appropriate through ESDs or ROD amendments.

While not affecting protectiveness, in the course of this review the EPA identified the following minor O&M-type issues which are listed here to ensure they receive adequate attention and follow-up:

Minor Issues Not Affecting Protectiveness

- Inspections and maintenance are performed by personnel familiar with the system during winter, when the plant is not operating, but documentation of the work procedures and what has been completed has not been prepared. The final OMMP should include a routine maintenance schedule, maintenance inspection checklist, and maintenance log.
- Specific elements of the institutional controls plan, particularly protocols for work along the Ford-Wellpinit road, need to be drafted.

IX. Protectiveness Statement

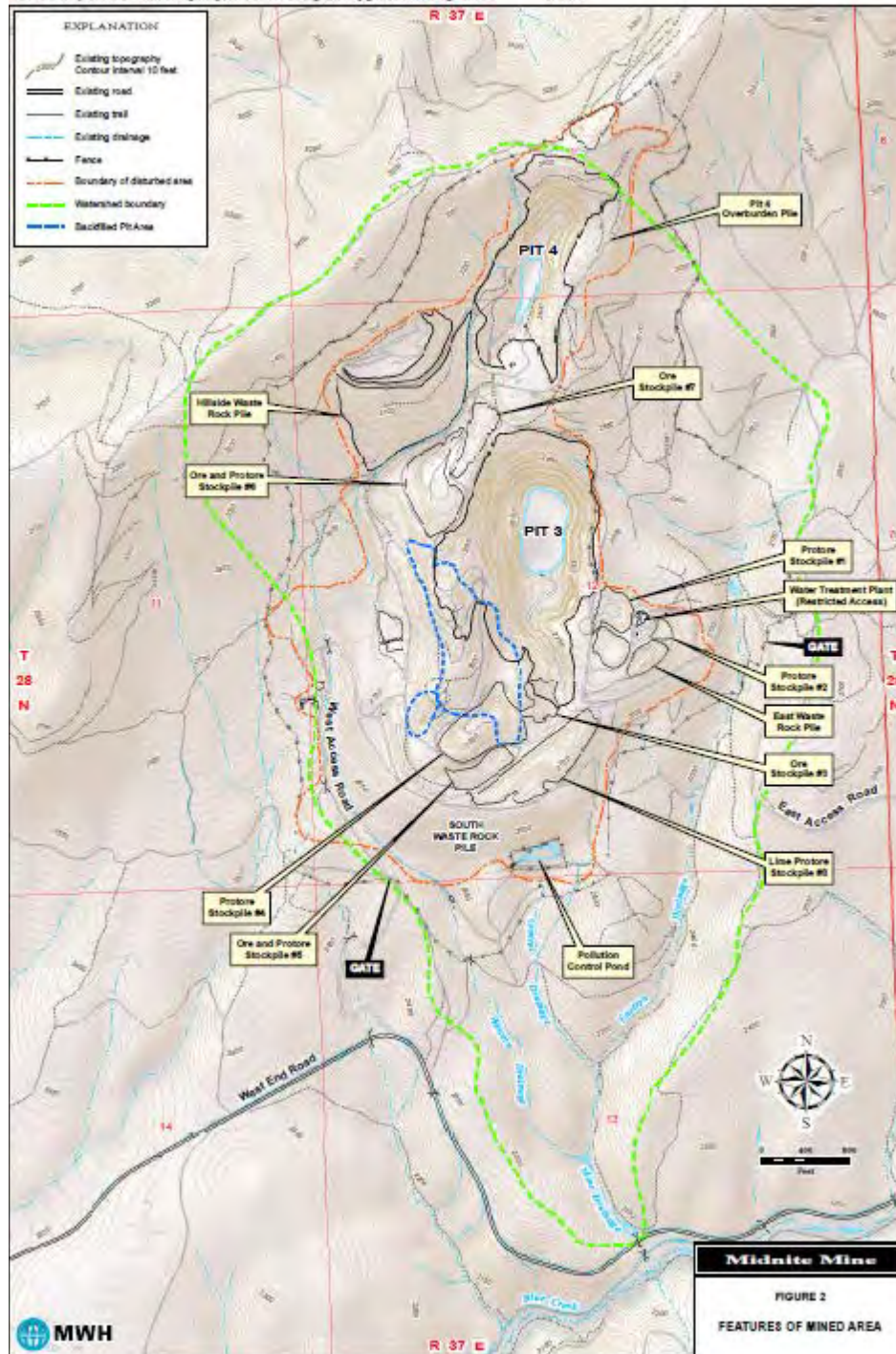
The remedy is expected to be protective of human health and the environment upon completion of the remedial actions and attainment of groundwater and surface water cleanup goals. In the interim, exposure pathways that could result in unacceptable risks are being controlled through access restrictions, warning signs, and the absence of groundwater wells in the area.

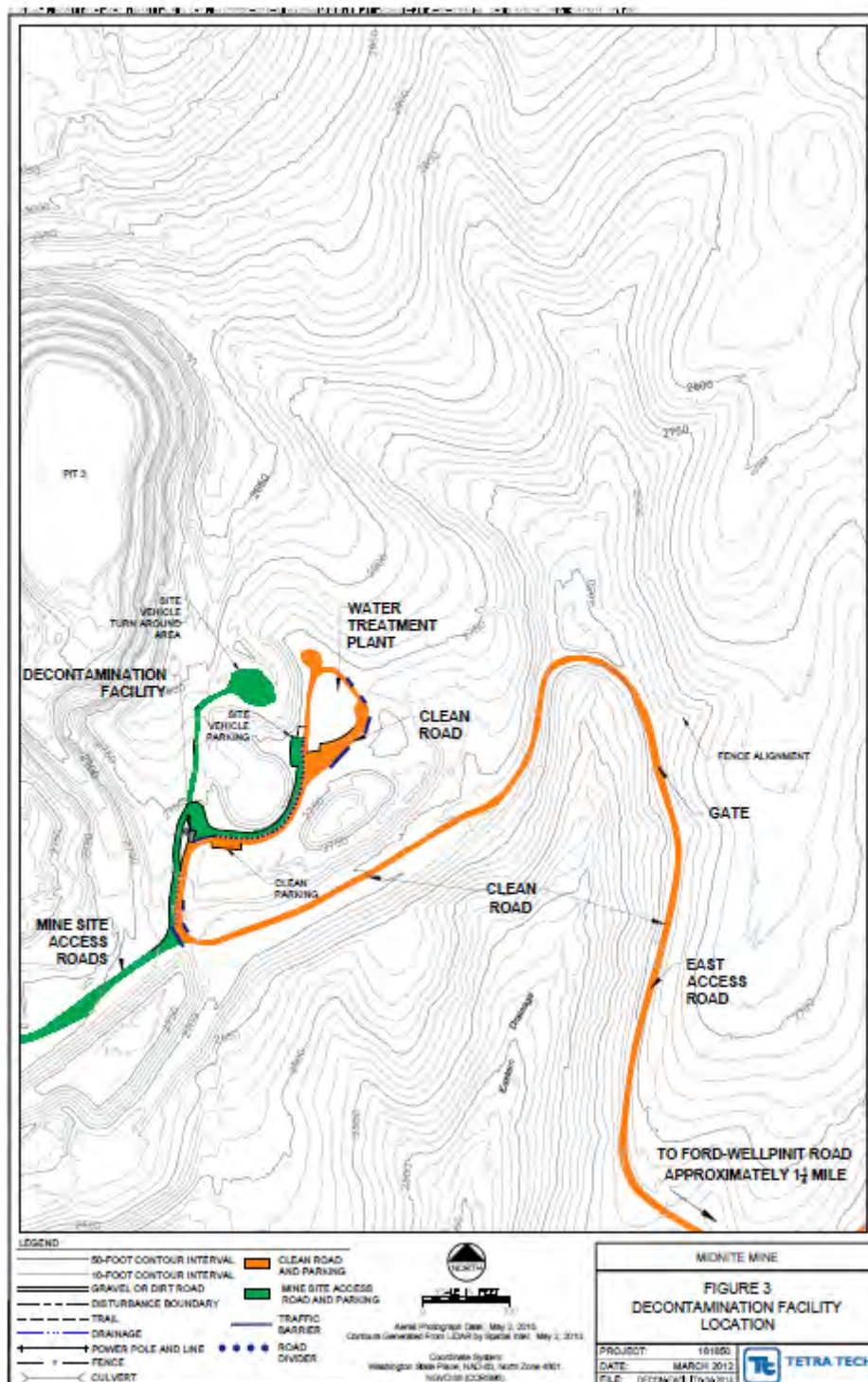
Long term protectiveness will be achieved through the implementation of the remaining remedial actions, including consolidation of waste materials, institutional controls, and the construction of a new water treatment plant.

X. Next Review

The next five-year review for the Midnite Mine Superfund Site is required by May 2019, five years from the date of this review. It is expected that construction of the remedy will be underway but not completed by that time.







APPENDIX 3 – INTERVIEW DOCUMENTATION

INTERVIEW RECORD		
Site Name: Midnite Mine		EPA ID No.: WA980978753
Subject: Five Year Review #1		Time: Date: 4/2/14
Type: × Telephone 9 Visit 9 Other Location of Visit: n/a		9 Incoming 9 Outgoing
Contact Made By:		
Name: Ellen Hale	Title: RPM	Organization: EPA R10
Individual Contacted:		
Name: Randy Connolly	Title: Superfund Coordinator	Organization: Spokane Tribe DNR
Telephone No: (509) 626-4425 Fax No: E-Mail Address: connolly@spokanetribe.com		Street Address: City, State, Zip:
Summary Of Conversation: <p>I reminded Randy that I was trying to complete the five year review. Said since he wasn't available the date of the inspection and interviews with Dawn/Newmont personnel, I missed a chance to get his perspective. How are things going at the site?</p> <p>Randy said they are going okay, in his opinion, and the design work is coming along. The relationships are pretty good. DNR staff are up to speed. He would like to see more involvement from the tribal staff on road related issues: traffic or road damage issues that may come up during remediation.</p> <p>I asked his opinion of things related to the interim work completed so far. He said things have improved. The fence is good, and decontamination facility and clean access road was good: should have been done sooner. He thought that while there are some people in the community who continue to have concerns, we all (including the mining company) have done a lot to make information available. A lot of people just want to project to get going, as they are hoping to get jobs.</p> <p>I asked him to re-send the figure and design of the signs the Tribe put up along Blue Creek, the drainages and the roads. He noted that a community member would like to see additional signs posted where boaters coming to camp near the mouth of Blue Creek can see them. I suggested that would be easy enough to do, and asked him to follow up on the suggestion.</p> <p>I had asked Randy previously about land use changes in the area. He said there hadn't been any. He believes the sustainability grant had made a difference in the community, but that it was winding down.</p> <p>I had asked Randy previously about whether any construction work had happened along the BIA highway to Ford. Dawn Mining did a cleanup in 2004 of spilled ore that could be detected (near surface) from the right of way, and I reminded him that afterwards I had asked Randy to draft procedures for coordinating utilities, road, drainage and other work that could uncover material that could be below the surface. He said that it was challenging, as Stevens County has the responsibility for the road. He noted that his initial draft was sent to the Tribe's attorney but didn't get further. I reminded him that EPA had a radiation health physicist who was working on the project at the time and had reviewed it, as well, and that she may be able to help. We agreed we need to resume work on the communication/coordination protocols. He thinks the Tribe may have the ability to do gamma surveys—but that has resource implications.</p>		

INTERVIEW RECORD

Site Name: Midnite Mine		EPA ID No.: WA980978753	
Subject: Five Year Review #1		Time:	Date: 2/19/14
Type: 9 Telephone × Visit 9 Other Location of Visit: Dawn Mill office, Ford		9 Incoming 9 Outgoing	
Contact Made By:			
Name: Ellen Hale		Title: RPM	Organization: EPA R10
Individual Contacted:			
Name: Bobby Nelson (and others)		Title: Operations Manager	Organization: Dawn Mining Co.
Telephone No: (509) 258-4511		Street Address:	
E-Mail Address: woodrow@wildblue.net		City, State, Zip: Ford, WA	

Summary Of Conversation:

In addition to Bobby Nelson, Lou Miller and Bill Lyle sat in the meeting room at the mill. I went through the checklist questions in preparation for a site visit. Michelle, who manages the files, pulled out some items for me to look at and agreed to provide a summary of operational costs. The water treatment plant lead operator, Don Plummer, retired a few years ago. Since then (October 2012) Bobby has overseen the operations staff running the WTP and pumpback system.

Going through the checklist, we found areas where documentation needs to be improved. Daily operations logs don't distinguish maintenance tasks, and maintenance done when the treatment system isn't operating is not tracked in log. *I asked if they would prepare their own checklist and schedule of routine maintenance items. [EPA is now reviewing this]

Some of the discussion points:

The treatment system staff are seasoned with operation of the plant, but *will need training for use of the new filter press system and updates to O&M plan. Construction of the addition took longer than expected—but the safety oversight and documentation was good.

Coordination with fire management and other Tribal programs is going pretty well. We reviewed fires and a WTP spill that happened during the last five years.

The water treatment plant isn't winterized. If they need to operate year round due to delays getting the NPDES permit, *that will require some lead time and design work. The FMEA process helped identify the need for automatic sensors, alarms, backup generators, tanks, and priority spare parts.

The fence is working well, with the automatic gate. No vandalism has occurred since it was installed. Several years ago, when work near the west gate was ongoing, equipment operators left the gate unlocked, allowing unauthorized access. Generally, damage is due mostly to tree fall, but monthly inspections often identify on-the-spot fixes. *They will update the inspection form to show the fence on a figure, so the crew can note where repairs were made and identify issues that require fencing contractor. The road dust issue is being controlled with ligno-sulfate, as approved by Tribe.

Stormwater controls are working—More water is being intercepted before passing through the waste pile. Regular inspections quarterly, plus after significant runoff events, and maintenance work usually takes place in fall.

With Dawn Mill closing, the reagent supplies must be stored at Midnite Mine. *Will provide design for current WTP and will confirm that new WTP design has adequate storage.

Wells being pumped (alluvial wells south of the mine and the BPA wells) are not locked, but are in a securer areas. Monitoring wells are locked. (Some of the older wells are not equipped with locks. This will be addressed in well abandonment plan)

APPENDIX 4 - SITE INSPECTION CHECKLIST

I. SITE INFORMATION			
Site name: Midnite Mine		Date of inspection: 2/20/14	
Location and Region: Spokane Reservation, WA		EPA ID: WA980978753	
Agency, office, or company leading the five-year review: US EPA Region 10		Weather/temperature: mild, clear day	
Remedy Includes: (Check all that apply) <input checked="" type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Access controls <input type="checkbox"/> Groundwater containment <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Vertical barrier walls <input checked="" type="checkbox"/> Groundwater pump and treatment <input checked="" type="checkbox"/> Surface water collection and treatment Other: Note that majority of remedy remains to be implemented.			
Attachments: Site map (see ATTACHMENT 1)			
II. INTERVIEWS (Check all that apply)			
<div style="display: flex; justify-content: space-between;"> <div> 1. O&M site manager <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 40%;"> <u>Robert Nelson Jr</u> Name </div> <div style="width: 30%;"> DMC Operations Manager Title </div> <div style="width: 30%;"> <u>2/20/14</u> Date </div> </div> <div style="margin-top: 5px;"> Interviewed at site <input checked="" type="checkbox"/> at office by phone Phone no. _____ Problems, suggestions; Report attached _____ _____ </div> </div> </div>			
<div style="display: flex; justify-content: space-between;"> <div> 2. O&M staff <div style="margin-top: 5px;"> None Available (WTP not in operation at time of inspection) <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;">Name</div> <div style="width: 30%;">Title</div> <div style="width: 30%;">Date</div> </div> <div style="margin-top: 5px;"> Interviewed at office by phone Phone no. _____ Problems, suggestions; Report attached _____ _____ </div> </div> </div> </div>			

3.	Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.			
Agency: <u>Spokane Tribe</u>				
Contact : <u>Blaine Kieffer</u> <u>Fire Management</u>				
	Name	Title	Date	Phone no.
Problems; suggestions; Report attached				
<u>Phone call – Overall positive interactions with Bill Lyle, mining company rep.</u>				
Agency: <u>Spokane Tribe</u>				
Contact: <u>Ron Samuels</u> <u>EMT lead</u>				
	Name	Title	Date	Phone no.
Problems; suggestions; Report attached				
<u>Phone call – Having a hard time getting EMTs 40-hr training – work schedule not 5-day run.</u>				
Agency: <u>Spokane Tribe DNR</u>				
Contact: <u>Randy Connolly</u> <u>Superfund Coordinator</u> <u>4/2/14</u> <u>509-626-4425</u>				
	Name	Title	Date	Phone no.
Problems; suggestions; <u>Report attached</u>				
4.	Other interviews (optional)			

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date N/A As-built drawings Readily available Up to date N/A Maintenance logs <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date N/A Remarks Issue: <u>maintenance is noted in operations log, but maintenance when plant is not operating is not. That maintenance not being tracked well.</u>			
2.	Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date N/A Contingency plan/emergency response plan Readily available Up to date N/A Remarks <u>Review of update for addition of filter press, concurrent with January 30, 2014 OMMP review</u>			
3.	O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available Up to date N/A Remarks: <u>At office in Ford, O & M logs vary in quality.</u>			
4.	Permits and Service Agreements Air discharge permit Readily available Up to date <input checked="" type="checkbox"/> N/A Effluent discharge <u>Readily available</u> <u>Up to date</u> N/A Waste disposal, POTW Readily available Up to date <input checked="" type="checkbox"/> N/A Other permits _____ Readily available Up to date <u>N/A</u> Remark: <u>License (RML) from DOH terminated. RML Radiation Health Plan incorporated.</u>			
5.	Gas Generation Records Readily available Up to date N/A Remarks <u>N/A</u>			
6.	Settlement Monument Records Readily available Up to date N/A Remarks <u>N/A</u>			
7.	Groundwater Monitoring Records Readily available Up to date N/A Remarks <u>N/A</u>			
8.	Leachate Extraction Records Readily available Up to date N/A Remarks <u>N/A</u>			
9.	Discharge Compliance Records Air <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date N/A Water (effluent) Readily available Up to date N/A Remarks: <u>Available at office in Ford. EPA has on file too.</u>			
10.	Daily Access/Security Logs <input checked="" type="checkbox"/> Readily available Up to date N/A Remarks: <u>Issue discussed of where to keep log. WTP has log, Decon has log, but no log at site entrance gate.</u>			

IV. O&M COSTS

1.	O&M Organization
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State in-house	Contractor for State
X PRP in-house	Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other_____	

2.	O&M Cost Records
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☒ Readily available ☒ Up to date
☒ Funding mechanism/agreement in place
 Original O&M cost estimate \$54,600/yr ☒ Breakdown attached

Total annual cost by year for review period if available	
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From ___ Jan ___ To ___ Dec 2009 ___ \$451,763 Breakdown attached
Total cost

From ___Jan___ To ___Dec 2010___ \$529,313 Breakdown attached
Total cost

From ___ Jan ___ To ___ Dec 2011 ___ \$491,933 Breakdown attached
Total cost

From ___Jan___ To ___Dec 2012___ \$337,909 Breakdown attached
Total cost

From Jan To Dec 2013 \$375,875 Breakdown attached
Date Date Total cost

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: In 2011, during a gap in license for sludge disposed at mill, mining company bought Petroset additive and took sludge to US Ecology as LLHW.

V. ACCESS AND INSTITUTIONAL CONTROLS	X Applicable	N/A
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A. Fencing

1.	Fencing damaged	X Location shown on site map	X Gates secured	N/A
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Remarks: Monthly inspection, repair as needed. Fence shown in Attachment 1.

<p>B. Other Access Restrictions</p>
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1.	Signs and other security measures	X Location shown on site map	N/A
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Remarks: Signs near roads and accessible water bodies shown in Attachment 1. Signs at gates okay.
Signs at intervals along fence (100' interval) not inspected.

C. Institutional Controls (ICs) – PENDING – ICIAP in review				
1.	Implementation and enforcement			
	Site conditions imply ICs not properly implemented	Yes	No	N/A
	Site conditions imply ICs not being fully enforced	Yes	No	N/A
	Type of monitoring (e.g., self-reporting, drive by) _____			
	Frequency _____			
	Responsible party/agency _____			
	Contact _____			
	Name	Title	Date	Phone no.
	Reporting is up-to-date	Yes	No	N/A
	Reports are verified by the lead agency	Yes	No	N/A
	Specific requirements in deed or decision documents have been met	Yes	No	N/A
	Violations have been reported	Yes	No	N/A
	Other problems or suggestions: Report attached			
	<u>ICs are in development. Spokane Tribe/EPA/Newmont discussions ongoing.</u>			
2.	Adequacy	ICs are adequate	ICs are inadequate	X N/A
	Remarks: _____			

D. General				
1.	Vandalism/trespassing	Location shown on site map	X	No vandalism evident
	Remarks: <u>Interviewee said it's not an issue since fence installed.</u>			
2.	Land use changes on site	N/A		
	Remarks: <u>None</u>			
3.	Land use changes off site	N/A		
	Remarks: <u>None</u>			
VI. GENERAL SITE CONDITIONS				
A. Roads	X Applicable	N/A		
1.	Roads damaged	Location shown on site map	X	Roads adequate N/A
	Remarks: <u>Roads are in good shape, dust suppressant applied periodically, speed limits enforced. East access road surfaced with layer of clean gravel when decon facility installed.</u>			

B. Other Site Conditions			
Remarks: Surface water mgt – drains, ditches, pipes, ponds pump back system – pumps, seep capture			
VII. LANDFILL COVERS Applicable X N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Remarks _____	Location shown on site map Depth _____	Settlement not evident
2.	Cracks Lengths _____ Widths _____ Depths _____ Remarks _____	Location shown on site map	Cracking not evident
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map Depth _____	Erosion not evident
4.	Holes Areal extent _____ Remarks _____	Location shown on site map Depth _____	Holes not evident
5.	Vegetative Cover Grass Cover properly established Trees/Shrubs (indicate size and locations on a diagram) Remarks _____	No signs of stress	
6.	Alternative Cover (armored rock, concrete, etc.) N/A Remarks _____		
7.	Bulges Areal extent _____ Remarks _____	Location shown on site map Height _____	Bulges not evident
8.	Wet Areas/Water Damage Wet areas Ponding Seeps Soft subgrade Remarks _____	Wet areas/water damage not evident Location shown on site map Location shown on site map Location shown on site map Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	Slope Instability Slides Areal extent _____ Remarks _____	Location shown on site map	No evidence of slope instability

B. Benches Applicable N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks _____ _____	Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____ _____	Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____ _____	Location shown on site map	N/A or okay
C. Letdown Channels Applicable N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement Areal extent _____ Depth _____ Remarks _____ _____	Location shown on site map	No evidence of settlement
2.	Material Degradation Material type _____ Areal extent _____ Remarks _____ _____	Location shown on site map	No evidence of degradation
3.	Erosion Areal extent _____ Depth _____ Remarks _____ _____	Location shown on site map	No evidence of erosion

4.	Undercutting	Location shown on site map	No evidence of undercutting
	Areal extent_____	Depth_____	
	Remarks_____		
5.	Obstructions	Type_____	No obstructions
	Location shown on site map	Areal extent_____	
	Size_____		
	Remarks_____		
6.	Excessive Vegetative Growth	Type_____	
	No evidence of excessive growth		
	Vegetation in channels does not obstruct flow		
	Location shown on site map	Areal extent_____	
	Remarks_____		
D. Cover Penetrations Applicable N/A			
1.	Gas Vents	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	N/A		Good condition
	Remarks_____		
2.	Gas Monitoring Probes	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks_____		
3.	Monitoring Wells (within surface area of landfill)		
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
			Good condition
	Remarks_____		
4.	Leachate Extraction Wells		
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
			Good condition
	Remarks_____		
5.	Settlement Monuments	Located	Routinely surveyed
			N/A
	Remarks_____		

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____ _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____ _____		
3.	Gas Monitoring Facilities (<i>e.g.</i> , gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____ _____		
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Functioning N/A Remarks _____ _____		
2.	Outlet Rock Inspected Functioning N/A Remarks _____ _____		
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____ _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____ _____		
3.	Outlet Works Functioning N/A Remarks _____ _____		
4.	Dam Functioning N/A Remarks _____ _____		

H. Retaining Walls		Applicable	N/A
1.	Deformations Horizontal displacement_____ Vertical displacement_____ Rotational displacement_____ Remarks_____	Location shown on site map	Deformation not evident
2.	Degradation Remarks_____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		X	Applicable
RPM did not inspect, but surface water management system upgraded in 2009 and 2010, with routine inspections.			
1.	Siltation Areal extent_____ Depth_____ Remarks_____	Location shown on site map	Siltation not evident
2.	Vegetative Growth Vegetation does not impede flow Areal extent_____ Type_____ Remarks_____	Location shown on site map	N/A
3.	Erosion Areal extent_____ Depth_____ Remarks_____	Location shown on site map	Erosion not evident
4.	Discharge Structure Remarks_____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	N/A
1.	Settlement Areal extent_____ Depth_____ Remarks_____	Location shown on site map	Settlement not evident
2.	Performance Monitoring Type of monitoring_____ Performance not monitored Frequency_____ Evidence of breaching Head differential_____ Remarks_____		

IX. GROUNDWATER/SURFACE WATER REMEDIES X Applicable [Interim operations ongoing] N/A				
A. Groundwater Extraction Wells, Pumps, and Pipelines X Applicable N/A				
1.	Pumps, Wellhead Plumbing, and Electrical X Good condition X All required wells properly operating Needs Maintenance N/A Remarks _____ _____ _____			
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances X Good condition Needs Maintenance Remarks _____ _____ _____			
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____ _____			
B. Surface Water Collection Structures, Pumps, and Pipelines Applicable N/A				
1.	Collection Structures, Pumps, and Electrical X Good condition Needs Maintenance Remarks: <u>These are checked daily</u>			
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances X Good condition Needs Maintenance Remarks__NB: On March 6, two weeks after February inspection, a pipe from the blood pool pumphouse broke, probably due to ice clogging and expansion. This was identified thanks to automatic alarms. The issue was promptly reported and responded to. See monthly progress report (dated April 10). _____ _____			
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks: Mining Company performed FMEA after 2009 to determine which priority parts are to be kept on site and what the availability and lead time issues are for others. _____ _____			

C. Treatment System			
	X	Applicable	N/A
1.	Treatment Train (Check components that apply) X Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ X Additives <u>sulfuric acid, lime, barium chloride, flocculant polymer, antiscalant</u> Others _____ X Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date (yes, but needs improvement) Equipment properly identified X Quantity of groundwater treated annually _____ 60 million gal combined _____ X Quantity of surface water treated annually _____ 60 million gal combined _____ Remarks: <u>This is getting to be an old WTP – could stand review for equipment labeling, but staff are currently up to speed. Will be okay until new WTP built.</u>		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks: <u>New building panels inspected and ok, didn't inspect existing panels.</u>		
3.	Tanks, Vaults, Storage Vessels N/A X Good condition Proper secondary containment Needs Maintenance Remarks: <u>Clarifier recently tested – better than expected.</u>		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks:		
5.	Treatment Building(s) N/A X Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks: <u>New building added for filter press.</u>		
6.	Monitoring Wells (pump and treatment remedy) X Properly secured/locked X Functioning X Routinely sampled X Good condition All required wells located Needs Maintenance N/A Remarks: <u>These wells are routinely sampled.</u>		
D. Monitoring Data			
1.	Monitoring Data X Is routinely submitted on time X Is of acceptable quality		
2.	Monitoring data suggests: Groundwater plume is effectively contained Contaminant concentrations are declining <u>Groundwater in alluvial zone is physically constrained</u>		

D. Monitored Natural Attenuation			
1.	Monitoring Wells (natural attenuation remedy)		
	Properly secured/locked	Functioning	Routinely sampled
	All required wells located	Needs Maintenance	N/A
	Remarks: <u>N/A at this time</u>		
X. OTHER REMEDIES			
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction. N/A – but parts of this remedy not complete yet.			
XI. OVERALL OBSERVATIONS			
A.	Implementation of the Remedy		
	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>2006 remedy includes containment of mine waste. Currently in RD. Only fence and WTP operations and some SW/GW upgrades completed to date.</u>		
B.	Adequacy of O&M		
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>The practices used day to day are ok, but documentation could be improved. Discussed these with company.</u>		

C.	Early Indicators of Potential Remedy Problems
	<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><u>None.</u></p>
D.	Opportunities for Optimization
	<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><u>Not at this time</u></p>